UiT The Arctic University of Norway
Department of Physics and Technology

Jobbnorge-ID: 115967
Søknadsfrist: Avsluttet
Nettside:
Omfang:
Varighet:

PhD in Integrated Remote Sensing and Numerical Forecasting at CIRFA

Application deadline: 10.08.2015
Ref. 2015/1327

The Department of Physics and Technology at *UiT - the Arctic University of Norway* (https://uit.no/om/enhet/forsiden?p_dimension_id=88136) together with research partners and industrial partners was awarded a Centre of Research based Innovation (SFI) by the Norwegian Research Council for the period 2015 to 2023.

The "Centre for Integrated Remote Sensing and Forecasting for Arctic Operations (CIRFA)" (http://cirfa.uit.no/) will contribute with research on methods and technologies that can reliably detect, monitor, integrate and interpret multi-sensor data describing the physical environment of the Arctic, and efficiently assimilate this information into models to perform predictions of sea ice state, meteorological and oceanographic conditions. This is necessary in order to meet challenges related safe maritime industrial operations in Arctic waters, and important technologies to meet challenges related to environment and climate. CIRFA shall do research which founds basis for innovation and new technical solutions to real challenges in the High North.

CIRFA is now announcing PhD and Postdoctoral fellowships.

The positions' fields of research/field of work
PhD fellowship 1: Remote sensing of Arctic oceanography. Employer: Norut, Tromsø (http://norut.no). The position is for *three* years.

The desired research field is oceanographic monitoring, with a specific emphasis on emerging synthetic aperture radar (SAR) systems and techniques. The research project is concentrated on algorithm development related to the interpretation of SAR ocean Doppler measurements and the polarization diversity of the ocean Doppler signals. The goal is the retrieval of the ocean surface current field from SAR measurements.

Specific requirements: Knowledge and experience in analysis and interpretation of SAR data, specifically for ocean applications, basic knowledge in numerical modelling and oceanography.

Contact: Professor Harald Johnsen: Harald.Johnsen@norut.no

PhD fellowship 2: Remote sensing of Arctic sea ice. Employer: *UiT - the Arctic University of Norway*, Tromsø (http://en.uit.no/startsida). The position is for *four* years, where one year is allocated to teaching tasks.

The research will focus on analysis of Arctic sea ice using multi-frequency, multi-polarization SAR data in combination with in-situ measurements from airborne and ground based sensors. Focus will be on sea ice type classification and characterization, applying polarimatric and statistical methods.

Specific requirements: Knowledge and experience in analysis and interpretation of SAR data of sea ice, knowledge in EM scattering theory and radar polarimetry, pattern recognition, and experience in multivariate statistical analysis.

Contacts:
Professor Wolfgang Dierking: Wolfgang.Dierking@awi.de
Professor Torbjørn Eltoft: Torbjorn.Eltoft@uit.no
Associate Professor Anthony Doulgeris: Anthony.P.Doulgeris@uit.no

PhD fellowship 3: Remote sensing of Arctic sea ice. Employer: *Nansen Environmental and Remote Sensing Center, Bergen* (http://www.nersc.no). The position is for *three* years.

The research will focus on analysis of Arctic sea ice using Synthetic Aperture Radar (SAR) data in combination with other satellite sensors, in particular passive microwave and optical-infrared data. The research will include sea ice classification, sea ice motion and deformation on different scales. Algorithms for retrieval of sea ice types and sea ice motion from the satellite sensors will be developed and validated. The algorithms will be used to produce sea ice data sets to analyse sea ice processes from basin-wide to local scales.

Specific requirements: Knowledge and experience in sea ice research and in sea ice remote sensing with multiple sensors, image processing and pattern recognition. Fieldwork experience will be an advantage.

Contacts:
Professor Wolfgang Dierking: Wolfgang.Dierking@awi.de
Professor Stein Sandven: Stein.Sandven@nersc.no
Associate Professor Anthony Doulgeris: Anthony.P.Doulgeris@uit.no

PhD fellowship 4: Remote sensing of oil spills and Arctic sea ice. Employer: *UiT - the Arctic University of Norway*, Tromsø (http://en.uit.no/startsida). The position is for *four* years, where one year is allocated to teaching tasks.

This research project is focusing on studies and algorithm development for analysis of quad-polarimetry (QP) and compact polarimetry (CP) SAR data, including CP to pseudo QP reconstruction techniques, feature extraction and information retrieval. The application areas are detection and characterization of oil slicks on open water and sea ice types in the Arctic region.

Specific requirements: Documented knowledge in SAR remote sensing, radar polarimetry (QP, CP), CP systems and related reconstruction and decomposition techniques. Experience in relevant fieldwork will be acknowledged.

Contact: Associate Professor Camilla Brekke: Camilla.Brekke@uit.no

PhD fellowship 5: Navigation and robustness of unmanned aircraft. Employer: *NTNU - The Norwegian University of Science and Technology*, Trondheim (http://www.ntnu.no). The position is for *three* years. NTNU-reference: IME 031-2015.

The research focus is on developing a Remotely Piloted Aircraft System (RPAS) platform and measurement system for sea-ice properties and detection and tracking of icebergs. The project will study design and technology to maximize the operational window while still keeping cost and size at a manageable level. It includes systems for “all weather” operation, that have improved wind and icing resistance; a robust communication and navigation system for operations in the Arctic; and launch and recovery system for ship-based operations.

Specific requirements: We are looking for candidates with a master degree in engineering, with a solid and documented background in control engineering, electrical engineering, aerospace engineering, mechanical engineering, systems engineering, or a related field. The successful candidate has the motivation and broad background need for interdisciplinary research, preferably with experience in several of the following fields: unmanned aerial vehicles, aircraft design, radio communications, GNC (guidance, navigation and control), aerodynamics, and arctic technology. It is considered beneficial if the candidate has relevant fieldwork experience.

The research activity will be associated with the Center of Excellence on Autonomous Marine Operations and Systems (AMOS) at NTNU (https://www.ntnu.edu/amos).

Contacts:
Professor Tor Arne Johansen.: Tor.Arne.Johansen@itk.ntnu.no
Adjunct Professor Rune Storvold: Rune.Storvold@norut.no

PhD fellowship 6: Ice drift prediction and mitigation of impact on marine operations. Employer: *NTNU - The Norwegian University of Science and Technology*, Trondheim (http://www.ntnu.no). The position is for *three* years. NTNU-reference: IVT-85/15.

Station-keeping of marine structures is challenged by drifting sea ice. Use of on board systems such as cameras and marine radars may detect movements in the ice field. The project will study algorithms that can identify such movements and identify ice features, and in this way predict the actions on the structures. In case of DP this may be used for thruster allocation.

Specific requirements: We are looking for candidates with a master degree in engineering, with a solid and documented background in physics, mathematics, marine engineering or control engineering. The successful candidate has the motivation and broad background need for interdisciplinary research. It is considered beneficial if the candidate has relevant background in arctic technology or fieldwork experience.

The research activity will be associated with the SFI *Sustainable Arctic Marine and Coastal Technology* (SAMCoT) at NTNU (https://www.ntnu.edu/amos).

Contacts: Professor Sveinung Løset.: Sveinung.Loset@ntnu.no

PhD fellowship 7: Assimilation of satellite information products in numerical modelling. Employer *UiT - the Arctic University of Norway*, Tromsø (http://en.uit.no/startsida). The position is for *four* years, where one year is allocated to teaching tasks.

This position is part of a project aiming at improving forecasts of ocean, ice and drifts in the Arctic. A high-resolution regional ocean-ice model including an assimilation system is used for this purpose. The project for this position will focus on the data assimilation part, especially the assimilation of sea-ice data obtained from satellites. The project will focus on estimating and implementing into the assimilation system the uncertainty of the observations.

Specific requirements: Candidates with documented background and experience in polar meteorology, numerical forecast modelling, and knowledge in assimilation methodologies will be prioritized.

Contact:
Professor Rune Graversen: Rune.Graversen@uit.no
Dr. Pål Erik Isachsen: palei@met.no

Further information about CIRFA and the positions is available by contacting:
Professor Torbjørn Eltoft, phone: +47 776 45184, email: torbjorn.eltoft@uit.no

NOTE: Applicants should indicate which position they are applying for, if more than one, indicate priority.

Qualification requirements
The successful applicants shall have a background that is well suited for the each research topic of the actual position. In all cases, we are looking for he candidates with solid background in physics, statistics and mathematics. When relevant for the research task, candidates with

knowledge and experience in SAR image analysis, signal and image processing, numerical modelling, and pattern recognition will be prioritized. The qualifications needs to be documented.

The applicant *may* present a description outlining the academic basis of the PhD project.

Emphasis shall also be attached to personal suitability.

PhD Fellowship:
For positions at UiT:
The successful applicant must fulfil the requirements for admission to the faculty's PhD programme, cf. Regulation for the degree of Philosophiae Doctor (PhD) at the University of Tromsø. In addition, he/she shall be able to document proficiency in English equivalent to Norwegian Higher Education Entrance Qualification, refer to the website about PhD regulations at UiT.

For positions at NTNU:
Applicants must be qualified for admission as PhD students at NTNU. See http://www.ntnu.edu/ime/research for information about PhD studies at NTNU.

Working conditions
PhD fellowship: The normal period of employment is three or four years. The nominal length of the PhD programme is three years. The fourth year, distributed as 25 % of each year, shall be used for teaching or other duties for the university.

A shorter period of appointment may be decided when the research fellow has already completed parts of his/her research training programme or when the appointment is based on a previous qualifying position (PhD Candidate, research assistant, or the like) in such a way that the total time used for research training amounts to three years.

Remuneration for the position of PhD Candidate is in accordance with the State salary scale code 1017. A compulsory contribution of 2 % to the Norwegian Public Service Pension Fund will be deducted.

Assessment
An expert committee will assess the applicants. The committee's mandate is to undertake an assessment of the applicants' qualifications based on the written material presented by the applicants, and the detailed description drawn up for the position.

The applicants who are assessed as the best qualified will be called to an interview. The interview shall among other things aim to clarify the applicant's personal suitability for the position. A trial lecture may also be held.

UiT The Arctic University of Norway wishes to increase the proportion of females in research positions. In the event that two or more applicants are found to be approximately equally qualified, female applicants will be given priority.

Application
The **application** and documents must be submitted electronically via the application form available on www.jobbnorge.no.
The application must include:

- Letter of application
- CV (containing a complete overview of education, supervised professional training and professional work)
- Certified copies of diplomas and references
    - *Diploma and transcripts from your Bachelor's degree or equivalen, Diploma and transcripts from your Master's degree or equivalent (Foreign applicants are advised to attach an explanation of their University's grading system,Diploma supplement for completed degree and documentation of English language proficiency.*
- Master's thesis or equivalent and other works (published or unpublished) which the applicant wishes to be taken into consideration during the assessment process. The applicants personal contribution to the submitted work should be indicated explicitly on a separate sheet.
- References (including contact details) and letters of recommendation.

All documentation that is to be evaluated must be certified and translated into English or a Scandinavian language.

Information and material to be considered during the assessment must be submitted by the stipulated deadline.

Questions concerning the organisation of the working environment, such as the physical state of the place of employment, health service, possibility for flexible working hours, part time, etc. may be directed to the telephone reference in this announcement.

Personal data given in an application or CV will be processed in accordance with the Act relating to the processing of personal data (the Personal Data Act). In accordance with Section 25 subsection 2 of the Freedom of Information Act, the applicant may request not to be registered on the public list of applicants. However, the University may nevertheless decide that the name of the applicant will be made public. The applicant will receive advance notification in the event of such publication.

Tilleggsinformasjon

Arbeidssted: